Hazardous Materials, Multiple-Casualty Incidents, and Incident Management
OBJECTIVES

39.1 Define key terms introduced in this chapter. Slides 14, 20, 22, 27–29, 31

39.2 Anticipate situations in which hazardous materials may be involved. Slide 16

continued
OBJECTIVES

39.3 Describe the roles in hazardous materials response of providers trained at each of the four levels of hazardous materials training specified by OSHA. Slide 15

39.4 Describe the responsibilities of the EMT at a hazardous materials incident. Slides 16–24
OBJECTIVES

39.5 Given a description of a hazardous materials incident, identify the safe and danger zones; and then the hot, warm, and cold zones. Slides 16, 20

continued
39.6 Explain how to identify specific hazardous materials using the NFPA 704 and Department of Transportation placard systems, packaging labels, invoices, bills of lading, shipping manifests, and Material Safety Data Sheets. Slide 17
39.7 Identify sources of information on initial actions to take once the hazardous material has been identified, including the *Emergency Response Guidebook*, hotlines, and poison control centers. Slides 18–19
OBJECTIVES

39.8 Discuss how to establish a treatment area and decontamination and care for patients at a hazardous materials incident. Slides 21–24

39.9 Describe multiple casualty incident operations. Slide 27
OBJECTIVES

39.10 Describe the principles and features of the Incident Command System. Slides 28–30

39.11 Describe the principles of primary triage, secondary triage, and the START triage system. Slides 31–35

continued
OBJECTIVES

39.12 Discuss transportation and staging logistics at a multiple-casualty incident. Slide 36

39.13 Recognize the psychological aspects of multiple-casualty incidents for patients and responders. Slide 37
CORE CONCEPTS

• How to identify and take appropriate action in a hazardous materials incident
• How to identify a multiple-casualty incident
• The role of an EMT at a multiple-casualty incident

continued
CORE CONCEPTS

- The incident command system
- Triage
- Transportation and staging logistics
- Psychological aspects of multiple-casualty incidents
Topics

• Hazardous Materials
• Multiple-Casualty Incidents
Hazardous Materials
What Are Hazardous Materials?

• “Any substance or material in a form which poses an unreasonable risk to health, safety, and property when transported in commerce.”—U.S. Department of Transportation (DOT)
Levels of Training

- First Responder Awareness (no minimum)
- First Responder Operations (8 hours)
- Hazardous Materials Technician (24 hours)
- Hazardous Materials Specialist (24 additional hours)
Responsibilities of the EMT

- Recognize hazmat incident
- Control scene
- Establish danger zone and safe zone
- Attempt to identify substance
Identify Hazardous Material

- Signs, labels, placards
  - Binoculars from safe distance
  - NFPA 704 system placards
  - Diamond-shaped DOT labels
- Other sources
  - MSDS, bill of lading, invoice, manifest
  - Interview workers
Identify Hazardous Material

• Get expert advice about next actions
  – Dispatcher
  – Hazardous materials expert
  – Emergency Response Guidebook
Identify Hazardous Material

• Get expert advice about next actions
  – CHEMTREC (800-424-9300)
  – CHEM-TEL (800-255-3924)
  – State/federal radiation control authorities
  – Regional poison control center
Control Zones

- Hot zone
  - Area of contamination or danger
- Warm zone
  - Area immediately adjacent to hot zone
- Cold zone
  - Area immediately adjacent to warm zone
  - Where equipment and emergency rescuers are staged
Treatment Area

• Rehabilitation operations
  – Located in cold zone
  – Protected from weather
  – Large enough to accommodate multiple rescue crews
  – Easily accessible to EMS units

continued
Treatment Area

- Care of injured and contaminated patients
  - Decontaminate in warm zone
  - Treat in cold zone
- Phases of decontamination
  - Gross decontamination
  - Secondary decontamination

continued
Treatment Area

• Mechanisms for decontamination
  – Emulsification
  – Chemical reaction
  – Disinfection
  – Dilution
  – Absorption or adsorption
  – Removal
  – Disposal

continued
Treatment Area

- Decontamination procedures
  - Victims wearing PPE
  - Victims not wearing PPE
Multiple-Casualty Incidents
Multiple-Casualty Incident Operations

- Know local disaster plan
  - Written to address events conceivable for particular location
  - Well publicized
  - Realistic
  - Rehearsed
Incident Command System

• National Incident Management System (NIMS)

Command

Operations  Planning  Logistics  Finance
Communications

• On arrival, give brief report and request necessary resources
• Incident commander only person to converse with communications center, disseminates information to others
• Have face-to-face conversations among command staff whenever possible
EMS Branch Functions
Under Command Structure

• Mobile command center
• Extrication
• Staging area
• Triage area
• Treatment area
• Transportation area
• Rehabilitation area
Triage

• Goal: afford greatest number of people greatest chance of survival

• Prioritizing patients
  – Priority 1: Treatable life-threatening illness or injury
  – Priority 2: Serious but not life-threatening illness or injury
  – Priority 3: Walking wounded
  – Priority 4 (sometimes called Priority 0): Dead or fatally injured
START Triage

- Simple Triage and Rapid Treatment
- Foundation of system is speed, simplicity, consistency of application
- Simple commands to patients
- Patient evaluation based on RPM
  - Respiration
  - Pulse
  - Mental status

continued
START Triage

• Able to walk?
  – Yes: Priority 3
  – No: Check respirations

• Respirations present?
  – Yes and >30/minute: Priority 1
  – Yes and <30/minute: Check pulse
  – No: Position airway; recheck respirations
  – Still no respirations: Priority 4 (or 0)
START Triage

• Good pulse?
  – Unresponsive, not breathing, no pulse: Priority 4 (or 0)
  – Breathing, no apparent pulse: Priority 1
  – Breathing, pulse, good skin signs, capillary refill: Check mental status

• Good mental status?
  – Alert: Priority 2
  – Altered mental status: Priority 1
Patient Identification

• Color code patients by priority
  – Priority 1: Red
  – Priority 2: Yellow
  – Priority 3: Green
  – Priority 4: Black
Transportation and Staging Logistics

- Triaged and treated patients next transported using priority system
- Ambulances stage in designated area to await direction and patients
- Receiving facilities contacted early to determine capabilities and update on expected patient counts
Psychological Aspects of MCIs

• Caring, honest demeanor can reassure patient
• Do not attempt to psychoanalyze person’s distress
• “Psychological first aid” may be necessary on the scene of MCI
Think About It

- If you are the first rescue vehicle to reach the scene of an MCI, what should you do?
Chapter Review
Chapter Review

• Be suspicious. Many hazmat incidents start out as routine EMS calls.
• Remember the Hot Zone-Warm Zone-Cold Zone.
• Patients who have been decontaminated still have some contamination.
Chapter Review

• Use your MCI plan and procedure at small incidents and larger ones will be easier when they occur.
• Learn and practice START triage essentials.
• Be alert for signs of stress and seek help as necessary.
Remember

• A hazardous materials response requires specialized training and resources. Common responsibilities of initial responders must be identification of the incident, scene control, and activation of appropriate resources.

continued
Remember

• Scene safety is highest priority; when possible, use scene clues, product information, and specific resources to identify hazardous materials.

• Decontamination prevents the spread of a hazardous material. EMTs are commonly involved in various levels of this process.
Remember

• Multiple-casualty incident overwhels resources of responding units. When this occurs, organization is the most important priority.

• NIMS and its incident command system provide organization resources and structure to improve management of large-scale incidents.

continued
Remember

• Triage allows EMTs to prioritize care and transport of patients when resources are limited.
Questions to Consider

• What is the hazardous substance? What risk does it pose?
• If a patient has some contamination, can we safely start decontamination?
• Should I start using triage tags?
Critical Thinking

• Your call is to a motor-vehicle collision with an unknown number of injuries. As your unit approaches the scene, you see that three cars and downed wires are involved. You get a whiff of gasoline as you pass by.
Critical Thinking

• The drivers are visible in each vehicle—one appears to be conscious and the other two are bent forward or slumped back. There are passengers visible in two vehicles, one or more of whom may need extrication. How should you proceed?
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